

## ABSTRACT OF THE DISCLOSURE

5 A high purity stream of methane can be obtained from crude natural gas, especially exhaust gas from waste landfills, by a process that includes first removing moisture, then feeding the dried crude gas mixture to a gas-liquid contact absorber to strip heavy hydrocarbon compounds in a primarily carbon dioxide by product stream. Methane enriched gas from the absorber is separated in a membrane separation unit which provides permeate enriched in carbon dioxide that is recycled to the absorber and a purified product stream of methane.